

WHAT IS CLAIMED IS:

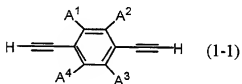
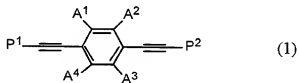
1. A compound represented by the formula (1) having a phenylacetylene structure,

5 wherein difference ΔE in energy of the highest occupied molecular orbital (HOMO) of parts of the formula (1) each represented by the formula (1-1), (1-2) or (1-3) calculated by method of molecular orbitals satisfies the following formula:

$$\Delta E = E_{1-1} - (E_{1-2} + E_{1-3}) / 2 \geq 0.3 \text{ electronvolt}$$

10 wherein E_{1-1} , E_{1-2} , and E_{1-3} denote the HOMO energy of corresponding parts represented by the formulae (1-1), (1-2), and (1-3), respectively, of the formula (1) calculated by the method of molecular orbitals, and

15 wherein polarizability anisotropy $\Delta\alpha$ of a molecule represented by the formula (1) calculated by said method is not lower than 500 atomic units:

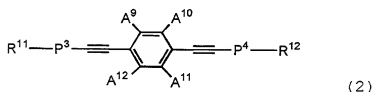


wherein A^1 to A^4 each independently stands for a hydrogen

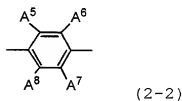
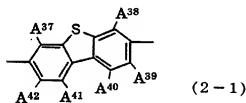
atom, a fluorine atom, or an alkyl or alkoxy group having
1 to 10 carbon atoms optionally substituted with at least
one fluorine atom; and P¹ and P² may have any chemical
structures as long as P¹ and P² satisfy said conditions of
the HOMO energy and polarizability anisotropy.

2. The compound of claim 1, wherein at least one of P¹ and
P² has an acrylate or methacrylate group on its terminal.

3. A compound represented by the formula (2) having a
phenylacetylene structure:



wherein A⁹ to A¹² each independently stands for a hydrogen
atom, a fluorine atom, an alkyl or alkoxy group having 1
to 10 carbon atoms optionally substituted with at least one
fluorine atom; P³ and P⁴ each stands for the formula (2-
1) or (2-2), with at least one of P³ and P⁴ standing for the
formula (2-1),

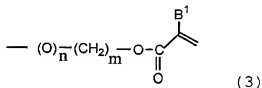


wherein A³⁷ to A⁴² in the formula (2-1) and A⁵ to A⁸ in the formula (2-2) each independently stands for a hydrogen atom, a fluorine atom, or an alkyl or alkoxy group having 1 to 10 carbon atoms optionally substituted with at least one fluorine atom;

R¹¹ and R¹² each independently stands for a hydrogen atom, a fluorine atom, a cyano group, -SF₃, -NCS, a 4-R²³-

(cycloalkyl) group, a 4-R²³-(cycloalkenyl) group, an R²⁴-(O)q group, or a group represented by the formula (3),

wherein R²³ stands for a hydrogen atom, or a straight or branched alkyl group having 1 to 12 carbon atoms optionally substituted with at least one fluorine atom, R²⁴ stands for a straight or branched alkyl group having 1 to 12 carbon atoms optionally substituted with at least one fluorine atom, or a straight or branched alkenyl or alkynyl group having 3 to 12 carbon atoms optionally substituted with at least one fluorine atom, q denotes 0 or 1,



wherein n denotes 0 or 1, and m denotes an integer of 1 to

20, B¹ stands for a hydrogen atom or a methyl group, when both R¹¹ and R¹² stand for a group represented by the formula (3), n, m, and B¹ in one group of the formula (3) may be the same as or different from those of the other.

4. The compound of claim 3, wherein at least one of R¹¹ and

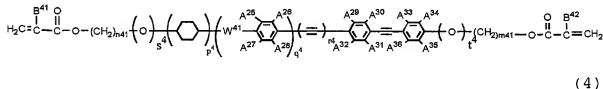
R¹² in the formula (2) stands for a group represented by the formula (3).

5. The compound of claim 4, wherein when all of A⁹ to A¹² in the formula (2) each stands for an alkyl group, the number of carbon atoms in each group is not less than two.

6. A liquid crystal composition comprising at least one compound represented by the formula (1) of claim 1.

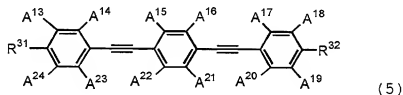
7. A liquid crystal composition comprising at least one compound represented by the formula (2) of claim 3.

8. The liquid crystal composition of claim 6, further comprising at least one liquid crystalline compound represented by any of the formula (4) to (7):

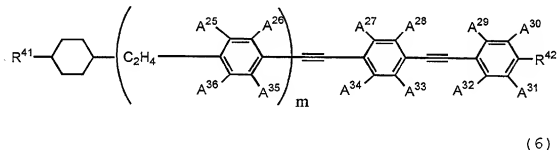


wherein A²⁵ to A³⁶ each independently stands for a hydrogen atom, a fluorine atom, or an alkyl or alkoxy group having 1 to 10 carbon atoms optionally substituted with at least one fluorine atom; B⁴¹ and B⁴² each stands for a hydrogen atom or a methyl group; p⁴, q⁴, r⁴, s⁴, and t⁴ each denotes 0 or 1, provided that when q⁴ is 0, at least one of A²⁹ to A³⁶ stands for an alkyl or alkoxy group having 1 to 10 carbon atoms optionally substituted with at least one fluorine atom; m⁴¹

and n^{41} each denotes an integer of 0 to 14, provided that when s^4 is 1, n^{41} is not 0, and when t^4 is 1, m^{41} is not 0; W^{41} stands for a single bond, $-CH_2CH_2-$, or $-C\equiv C-$;

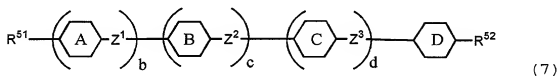


- 5 wherein A^{13} to A^{24} each independently stands for a hydrogen atom, a fluorine atom, an alkyl or alkoxy group having 1 to 14 carbon atoms optionally substituted with at least one fluorine atom, with at least one of A^{13} to A^{24} standing for an alkyl or alkoxy group having 1 to 10 carbon atoms
 10 optionally substituted with at least one fluorine atom; R^{31} and R^{32} each independently stands for a hydrogen atom, a fluorine atom, a cyano group, $-SF_5$, $-NCS$, a 4- R^{33} -(cycloalkyl) group, a 4- R^{33} -(cycloalkenyl) group, or an $R^{34}-(O)q^{31}$ group, wherein R^{33} stands for a hydrogen atom, or
 15 a straight or branched alkyl group having 1 to 12 carbon atoms optionally substituted with at least one fluorine atom, R^{34} stands for a straight or branched alkyl group having 1 to 12 carbon atoms optionally substituted with at least one fluorine atom, and q^{31} denotes 0 or 1;



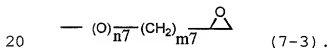
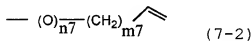
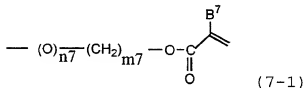
20 wherein A^{25} to A^{36} each independently stands for a hydrogen

atom, a fluorine atom, or an alkyl group having 1 to 10 carbon atoms; m denotes 0 or 1; R⁴¹ stands for a hydrogen atom or a straight or branched alkyl group having 1 to 12 carbon atoms optionally substituted with at least one fluorine atom; R⁴² stands for R⁴¹, a fluorine atom, a cyano group, a 4-R⁴³-(cycloalkyl) group, a 4-R⁴³-(cycloalkenyl) group, or an R⁴⁴-(O)q⁴¹ group, wherein R⁴³ stands for a hydrogen atom or a straight or branched alkyl group having 1 to 12 carbon atoms optionally substituted with at least one fluorine atom, R⁴⁴ stands for a straight or branched alkyl group having 1 to 12 carbon atoms optionally substituted with at least one fluorine atom, and q⁴¹ denotes 0 or 1;



wherein Rings A, B, C, and D each independently stands for 1,4-phenylene, 1,4-cyclohexylene, 1,4-cyclohexenylene, 4,1-cyclohexenylene, 2,5-cyclohexenylene, 5,2-cyclohexenylene, 3,6-cyclohexenylene, 6,3-cyclohexenylene, 2,5-pyrimidinediyl, 5,2-pyrimidinediyl, 2,5-pyridinediyl, 5,2-pyridinediyl, 2,5-dioxanediyl, or 5,2-dioxanediyl, and at least one hydrogen atom on any of Rings A, B, C, and D may be substituted with a fluorine atom; R⁵¹ and R⁵² each stands for a hydrogen atom, a fluorine atom, a fluoromethyl group, a difluoromethyl group, a trifluoromethyl group, a fluoromethoxy group, a difluoromethoxy group, a trifluoromethoxy group, a cyano

group, an alkyl group having 1 to 12 carbon atoms, an alkenyl group having 3 to 12 carbon atoms, an alkynyl group having 3 to 12 carbon atoms, an alkoxy group having 1 to 12 carbon atoms, an alkenyloxy group having 3 to 12 carbon atoms, an alkynyloxy group having 3 to 12 carbon atoms, an alkoxyalkyl group having 2 to 16 carbon atoms, an alkoxyalkenyl group having 3 to 16 carbon atoms, or a group represented by the formula (7-1), (7-2), or (7-3), wherein m' denotes an integer of 1 to 12, n' denotes 0 or 1, wherein at least one methylene group of said alkyl, alkenyl, or alkynyl group may be replaced with an oxygen, sulfur, or silicon atom, and said groups may be straight or branched; Z^1 , Z^2 , and Z^3 each independently stands for $-\text{COO}-$, $-\text{OCO}-$, $-\text{OCH}_2-$, $-\text{CH}_2\text{O}-$, an alkylene group having 1 to 5 carbon atoms, an alkenylene group having 2 to 5 carbon atoms, an alkynylene group having 2 to 5 carbon atoms, or a single bond; b , c , and d each independently denotes 0 or 1, with $b + c + d \geq 1$:



9. The liquid crystal composition of claim 7, further comprising at least one liquid crystalline compound

represented by any of the formulae (4) to (7).

10. A polymer obtained by polymerization of at least one compound of claim 2.

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11. A polymer obtained by polymerization of at least one compound of claim 4.

10 12. A polymer obtained by polymerization of the liquid crystal composition of claim 6.

13. A polymer obtained by polymerization of the liquid crystal composition of claim 7.

15 14. A liquid crystal composition comprising:
at least one compound selected from the group consisting of the compound of claim 2, the polymer of claim 10, and the polymer of claim 12, and

20 at least one monomer compound other than the compound of claim 2, selected from the group consisting of methacrylate esters, acrylate esters, epoxy, and vinyl ethers.

25 15. The liquid crystal composition of claim 14, further comprising at least one liquid crystalline compound represented by any of the formulae (4) to (7).

16. A polymer obtained by polymerization of the liquid crystal composition of claim 14.

17. A liquid crystal composition comprising:

5 at least one compound selected from the group consisting of the compound of claim 4, the polymer of claim 11, and the polymer of claim 13, and

at least one monomer compound other than the compound of claim 4, selected from the group consisting of
10 methacrylate esters, acrylate esters, epoxy, and vinyl ethers.

18. The liquid crystal composition of claim 17, further comprising at least one liquid crystalline compound
15 represented by any of the formulae (4) to (7).

19. A polymer obtained by polymerization of the liquid crystal composition of claim 17.

20. An optically anisotropic product produced with at least one material selected from the group consisting of the compound of claim 2, the polymer of claim 10, the polymer of claim 12, the liquid crystal composition of claim 14, and the polymer of claim 16.

21. An optically anisotropic product produced with at least one material selected from the group consisting of

the compound of claim 4, the polymer of claim 11, the polymer of claim 13, the liquid crystal composition of claim 17, and the polymer of claim 19.

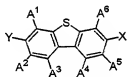
22. An optical or liquid crystal element produced with at least one material selected from the group consisting of the compound of claim 2, the polymer of claim 10, the polymer of claim 12, the liquid crystal composition of claim 14, and the polymer of claim 16.

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23. An optical or liquid crystal element produced with at least one material selected from the group consisting of the compound of claim 4, the polymer of claim 11, the polymer of claim 13, the liquid crystal composition of claim 17, and the polymer of claim 19.

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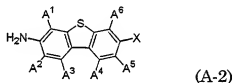
24. A dibenzothiophene compound represented by the formula (A-1):



(A-1)

- wherein A¹ to A⁶ each independently stands for a hydrogen atom, a fluorine atom, an alkyl or alkoxy group having 1 to 10 carbon atoms optionally substituted with at least one fluorine atom, X stands for a halogen atom, and Y stands for a halogen atom or a hydroxyl group.

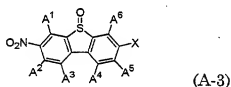
25. A dibenzothiophene compound represented by the formula (A-2):



wherein A¹ to A⁶ and X mean the same as those in the formula (A-1).

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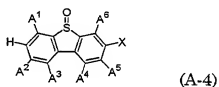
26. A dibenzothiophene oxide compound represented by the formula (A-3):



wherein A¹ to A⁶ and X mean the same as those in the formula (A-1).

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27. A dibenzothiophene oxide compound represented by the formula (A-4):



wherein A¹ to A⁶ and X mean the same as those in the formula (A-1).

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28. A method for producing the dibenzothiophene compound of claim 24 comprising:

diazotizing a dibenzothiophene compound represented by

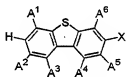
the formula (A-2) to obtain a diazonium salt, and

decomposing said diazonium salt in the presence of an anion corresponding to Y in the formula (A-1).

- 5 29. A method for producing the dibenzothiophene compound of claim 25 comprising reducing a dibenzothiophene oxide compound represented by the formula (A-3).

- 10 30. A method for producing the dibenzothiophene oxide compound of claim 26 comprising nitrating a dibenzothiophene oxide compound represented by the formula (A-4).

- 15 31. A method for producing the dibenzothiophene oxide compound of claim 27 comprising oxidizing a dibenzothiophene compound represented by the formula (A-5):



(A-5)

wherein A¹ to A⁶ and X mean the same as those in the formula (A-1).